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Design and Construction of a Radiofrequency Plasma Device

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Poster Presentation 7

DESIGN AND CONSTRUCTION OF A RADIOFREQUENCY PLASMA DEVICE

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A plasma consists of ionized matter. Sometimes referred to as the fourth state of matter, most of the apparent universe exists in this plasma state. Consequently, there is an obvious desire to understand the underlying physics of plasmas.

To investigate this state of matter, we have begun construction of a radiofrequency plasma device. The external helicon source has been constructed and tested, creating a nitrogen plasma. Within a specified power range, a plasma has been qualitatively observed. In the future, this source will be connected to a larger vacuum chamber (58.5 cm in length, 35.5 cm in diameter), allowing us examine a number of basic plasma processes, such as wave propagation, in a variety of plasmas. In this poster, we present work that has been done in the design and construction of this plasma device and future plans for the device.